

Multi Choice Test Paper Units

Ex 01,02,03,04

1.	European Directives define criteria for various subjects. The ATEX 95 Directive is concerned with:	
A.	The health and safety of workers exposed to potentially explosive atmospheres.	
B.	The minimization of electromagnetic interference.	
<u>C.</u>	<u>The design of equipment for use in potentially explosive atmospheres.</u>	<u>C</u>
D.	The standardization of electricity supply voltage.	

2.	In accordance with ATEX directive, the equipment is divided into groups and categories. For equipment to be used above ground, exposed to flammable gases and/or combustible dusts, which of the following is appropriate:	
A.	Group 1 and Categories 1, 2 & 3.	
<u>B.</u>	<u>Group 2 and Categories 1, 2 & 3.</u>	<u>B</u>
C.	Group 1 and Categories M1 & M2.	
D.	Group 2 and Categories M1 & M2.	

3.	The ATEX 95 – Equipment – Directive, adopts categories of equipment. The ATEX 137 – User Directive classifies Zones of use. There is a relationship. Where can category 2 equipment be used, unless the risk assessment states otherwise :	
A.	Zones 0, 20 and less onerous duties.	
<u>B.</u>	<u>Zones 1, 21 and less onerous duties</u>	<u>B</u>
C.	Zones 2 and 22 only.	
D.	Zones 20, 21 and 22 only.	

4.	Apparatus for installation in potentially explosive gas atmospheres should be manufactured in accordance with Standards. Which of the following is a construction standard :	
<u>A.</u>	<u>BS EN 60079 - 17.</u>	
B.	BS 7671.	
C.	BS EN 60079 - 10.	
D.	BS EN 50014.	D

5.	Hydrogen is classed as a gas belonging to which one of the following Sub - divisions:	
A.	I.	
B.	II A.	
C.	II B.	
<u>D.</u>	<u>II C.</u>	<u>D</u>

6.	In order for combustion of a petroleum product to occur, three of the following items are necessary. Which item is NOT necessary:	
A.	A source of ignition.	
B.	A supply of fuel.	
<u>C.</u>	<u>An enclosure.</u>	<u>C</u>
D.	A supply of oxygen.	

7.	The temperature at which a gas/air mixture will ignite spontaneously without any additional or extraneous ignition source is known as :	
A.	The flash point.	
B.	The fire point.	
<u>C.</u>	<u>The ignition temperature.</u>	<u>C</u>
D.	The upper ignition temperature.	

8.	To identify Zones on drawings, special markings are used. Which, of the following applies to ZONE 1 :	
A.	Small circles.	
B.	Symbol as shown on the drawing key.	B
<u>C.</u>	<u>Cross hatching at 45 degrees.</u>	
D.	Slanting lines at 45 degrees.	

9.	If an explosive gas/air mixture is LIKELY to occur in normal operation occasionally, what will the Area classification be :	
A.	Zone 0.	
<u>B.</u>	<u>Zone 1.</u>	<u>B</u>
C.	Zone 2.	
D.	Zone 21.	

10.	Hazardous areas are divided into Zones. Which Zone is described as an Area where an explosive gas/air mixture is UNLIKELY to be present during normal operation, but if it does occur, will persist for a short period only:	
A.	Zone 0.	
B.	Zone 1.	
<u>C.</u>	<u>Zone 2.</u>	<u>C</u>
D.	Zone 22.	

11.	Which one of the following methods of explosion protection is suitable for use in a Zone 1 area:	
<u>A.</u>	<u>EEx "d".</u>	<u>A</u>
B.	EEx "u".	
C.	EEx "n".	
D.	EEx "x".	

12.	The rating plate markings of Group II explosion protected equipment MAY include IIA, IIB and IIC to signify an appropriate apparatus subgroup. If there is just "II" without A, B and C, with what gas/vapor could this equipment be used:	
A.	The equipment is unsuitable for use in any area where explosive gas/vapor may be present.	
B.	The equipment can only be used with gases/vapors in sub-division IIA.	
<u>C.</u>	<u>The equipment can be used with all Group II gases/vapors.</u>	<u>C</u>
D.	The equipment can only be used with gases/vapors in sub-division IIA and IIB.	

13.	There are number of recognized temperature classes for equipment used in flammable atmosphere. How many are there:	
A.	4.	
<u>B.</u>	<u>6.</u>	<u>B</u>
C.	8.	
D.	10.	

14.	Unless specifically marked on the label, it may be assumed that the design ambient temperature range of equipment for use in the UK, will be:	
A.	-10 to +50 deg C.	
<u>B.</u>	<u>-20 to +40 deg C.</u>	<u>B</u>
C.	45 deg C max.	
D.	35 deg C max.	

15.	Flameproof equipment certified for use in subdivisions IIB gases may also be installed in other locations. In which of the following location groups may it be installed:	
A.	Zone 1 and Zone 2, gas subdivisions IIB and IIC.	
B.	Zone 1 and Zone 2, gas subdivisions IIA and IIB.	B
C.	Zone 1 and Zone 2, gas group IIB only.	
D.	Any hazardous location.	

16.	Standards for flameproof EEx “d” apparatus specify maximum joint gaps and minimum face widths. What is subjective of these dimensions:	
A.	<u>To prevent the products of an internal explosion being transmitted to an external explosive atmosphere.</u>	A
B.	To maintain an equilibrium between the pressure inside and outside the enclosure by allowing gases to escape.	
C.	To provide space for a sealing gasket.	
D.	To maintain the mechanical strength of the enclosure.	

17.	A small (less than 500cc vol) type EEx”d” junction box is fitted with a flange joint. If there is a hydrogen gas release in the vicinity, what is the maximum flange gap allowed by the standard:	
A.	0.1mm.	A
B.	0.18mm.	
C.	0.4mm.	
D.	1.0mm.	

18.	When cable glands are used with direct entry to EEx”d” equipment, the number of threads and axial threads length are important. Which is the minimum requirement for a parallel threaded entry into the enclosure in accordance with current standards :	
A.	Five threads and length to suit.	
B.	Five fully engaged threads or 8 mm axial thread whichever is the greater.	B?
C.	Five fully engaged threads or 12.5 mm axial thread whichever is the greater.	
D.	Ten fully engaged threads or 15 mm axial thread whichever is the greater	

19.	A minimum clearance distance is required between any flanged joints or openings in EEx"d" apparatus and solid obstructions such as walls, steelworks etc. For a group IIC enclosure what should this be :	
A.	Not less than 1metre.	
B.	Not less than 400mm.	
C.	Not less than 100mm.	
D.	<u>Not less than 40mm.</u>	D

20.	When an EEx"d" flameproof machine is fitted is an EEx"e" terminal box, which glands should be used:	
A.	<u>EEx"d"</u> .	
B.	Gland suitable for EEx"e".	A
C.	EEx"i"	
D.	E1WF.	

21.	What do you understand by pressure piling. Which of the following brief definitions is most relevant:	
A.	Where heavy equipment is mounted on top of supporting piles.	
B.	Where ignition in one part of an enclosure causes a higher explosion pressure in another interconnected part.	B
C.	When there is a buildup of stress due to material fatigue.	
D.	Where gas pressure causes a vent to open.	

22.	In which one of the following Zone groupings is it permissible for pressurized equipment type EEx"p" to be selected and used:	
A.	Zones 0, 1 and 2.	
B.	<u>Zones 1 and 2 only.</u>	B
C.	Zone 1 only.	
D.	Zone 2 only.	

23.	Equipment with protection type EEx"p" may be used in certain explosive atmospheres. Which of the following statements is correct for this type of protection :	
A.	Equipment is pressurized to contain any explosive gases.	
B.	The internal pressure is always raised to above 0.5 Bar (7.5 psl).	
C.	Equipment has to be pressurized for at least 10 minutes before switching it on.	
D.	Pressurization air shall be drawn from a non-hazardous area.	D

24.	The markings on an enclosure include protection type EEx"e", which of the following describes this equipment:	
A.	Flameproof.	
<u>B.</u>	<u>Increased safety.</u>	<u>B</u>
C.	Purged.	
D.	Intrinsically safe.	

25.	On the rating plate of an EEx"e" motor, what do the markings in the following example mean; Te 6.5 secs T3:	
A.	The motor should not be re-started within 6.5 seconds, if the T3 rating is to be maintained.	
<u>B.</u>	<u>The motor control gear must disconnect the motor within 6.5 seconds if the motor stalls after reaching its normal operating temperature. (to maintain T value)</u>	<u>B</u>
C.	The motor will take 6.5 seconds to run up to speed from ambient temperature equivalent to T3.	
D.	The insulation has been tested for 6.5 seconds at a temperature equal to T3.	

26.	What is the minimum IP rating considered to be suitable for an EEx "e" junction box:	
A.	IP45.	
<u>B.</u>	<u>IP54.</u>	<u>B</u>
C.	IP64.	
D.	IP5x.	

27.	For which of the following zone groupings is it permissible for EEx"n" equipment to be selected and used:	
A.	Zones 0, 1 and 2.	
B.	Zones 0 and 1 only.	
C.	Zones 1 and 2.	
<u>D.</u>	<u>Zone 2 only.</u>	<u>D</u>

28.	In order to meet the requirements of the apparatus standard, terminal boxes on EEx"n" luminaries that contain bare live parts, will have a minimum ingress protection of:	
A.	IP20.	
B.	IP44.	
<u>C.</u>	<u>IP54.</u>	<u>C</u>
D.	IP65.	

29.	The marking plate on an item of equipment may contain a number of markings. If the markings include the following-Ex"d[ia]. Does this mean that:	
A.	All the equipment within the enclosure is intrinsically safe.	
B.	The flameproof enclosure can be regarded as "simple apparatus " in an "ia" circuit.	
C.	Electrical items other than intrinsically safe may be inside.	
D.	The enclosure is flameproof and contains associated "intrinsically safe" equipment.	D

30.	There are two categories of intrinsically safe apparatus "ia" and "ib". Which of the following statements is true:	
A.	"ib" is only suitable for Zone 2.	
B.	"ia" is suitable for Zones 0,1 and 2 and specified gas subdivisions.	B
C.	"ib" is suitable for all Zones and gas subdivisions.	
D.	"ia" is unsuitable for Zone 0 gas subdivisions IIC.	

31.	The function of safety units, such as Zener barriers is to:	
A.	Limit the maximum energy which may be transferred from the power supply to equipment in the hazardous area.	A
B.	Allow any type of certified apparatus to be used without any other considerations being necessary.	
C.	Allow certified and simple apparatus to be used without any other considerations being necessary.	
D.	Limit the capacitance and inductance in the hazardous area to safe levels.	

32.	Where instrumentation is used in hazardous area, a number of choices for the type of protection may be suitable. Which of the following protection types has the highest level of safety/integrity:	
A.	Ex"ia".	A
B.	Ex"ib".	
C.	Ex"e".	
D.	Ex"n".	

33.	Which one of the following types of equipment may be connected to an intrinsically safe Zener diode safety barrier:	
A.	Any apparatus may be connected in the hazardous area.	
B.	Simple apparatus and any type of IS certified apparatus.	
C.	Only the apparatus specified in the documentation.	C?
D.	The apparatus specified in the documentation and simple apparatus.	

34.	To preserve the safety of an intrinsically Safe system, where the supply is TN-S , a high integrity earth MAY be required, Which one of the following types does NOT require an intrinsically Safe dedicated earth:	
A.	A galvanic ally isolated barrier.	A
B.	A Zener diode barrier with output in Hazardous area.	
C.	A Zener diode 24 volt barrier.	
D.	Barriers for use with subdivisions IIC gases.	

35.	Um is defined as the maximum r.m.s supply voltage which may be applied to the non-intrinsically safe terminals of an intrinsically safe unit (usually the supply side). What must the value of Um be:	
A.	28 volts.	
B.	110 volts.	
C.	<u>250 volts.</u>	C
D.	As recorded in the documentation.	

36.	Intrinsically safe (IS) and non "IS" terminals may be fitted in the same box. The permitted distance, through air, between live parts of (IS) and non "IS" terminals, should be no less than:	
A.	3mm.	
B.	6mm.	
C.	40mm.	
D.	<u>50mm.</u>	D

37.	On intrinsically safe equipment, what is the minimum clearance between the bare conducting parts of external conductors connected to a terminal AND earthed metal:	
A.	1.5mm.	
B.	<u>3mm.</u>	B
C.	6mm.	
D.	50mm.	

38.	Armored E1W cable glands are to be fitted in to an EEx"e" plastic terminal box, that has clearance holes, but no internal earth plate. Which of the following arrangements is acceptable:	
A.	Fit gland, earth tag, internal lock nut and external shroud.	
B.	Fit gland, earth tag, external IP seal washer and lock nut.	B
C.	Fit gland, external IP seal washer and internal lock nut.	
D.	Fit gland and external IP seal washer.	

39.	A direct entry EEx"d" Group IIC enclosure in Zone 1 gas group IIB, has a volume of 1 liter. What is the minimum type of cable gland permitted if round, compact cables with extruded bedding and SWA are used:	
A.	Certified plastic EEx"d" IIC gland.	
B.	Certified brass E1WF EEx"d" IIC gland.	B
C.	Certified brass E1W EEx"e" gland.	
D.	Certified brass E1WF EEx"d" IIC barrier gland.	

40.	Which of the following marks indicates that the item of equipment has been certified to European standard:	
A.	The type of protection is prefixed with "EEx".	
B.	A hexagon with "EU" inscribed within.	
C.	The certificate number will be marked with suffix "X".	
<u>D.</u>	<u>A hexagon with "Ex" inscribed within.</u>	<u>D</u>

41.	The following information appears on an item of certified apparatus. BASEEFA EX 822234/X. What does the final suffix "X" mean:	
A.	The apparatus must be installed in a safe area.	
B.	The apparatus cannot be used outdoors.	
C.	The apparatus does not have impact protection.	
<u>D.</u>	<u>Special conditions apply, refer to documentation.</u>	<u>D</u>

42.	Which one of the following is it essential to understand, prior to working in a potentially explosive atmosphere:	
<u>A.</u>	<u>The basic requirements for working in Zones.</u>	<u>A</u>
B.	The manufacturer's literature.	
C.	The way in which the equipment works.	
D.	Panel wiring diagrams.	

43.	Under which one of the following conditions are you permitted to undertake work involving test or faultfinding in a hazardous area:	
A.	When protection is type EEx"d".	
B.	When protection is type EEx"p".	
C.	When you have a "gas free certificate".	C
D.	When the work site has a gas and dust monitor.	

44.	What are the minimum isolation requirements before working on the interior of the electrical apparatus located in a hazardous area. The single phase supply is from a switchboard in a remote switch room:	
A.	Operate the correct contactor.	
B.	Operate an on-load double pole (phase and neutral) isolator and padlock it in the off position.	
C.	Remove line fuse, close box and padlock.	
<u>D.</u>	<u>Open an on-load double pole (phase and neutral) isolator, disconnect phase and neutral conductors and padlock isolator in the off position.</u>	<u>D</u>

45.	You are to carry out “power on” test on a flameproof item (EEx”d”), in a Zone 1 area, after opening and changing some wiring connections. Which of the following should you do, as a minimum requirement:	
A.	Put at least one bolt back in the cover to keep it closed and hang a “Danger Live” notice on the unit, whilst you energize it.	
B.	Put one bolt back in each corner, hang a “Danger Live” notice on the unit and then energize it.	
<u>C.</u>	<u>Put all bolts back, make spanner tight and check any gaps before energizing the unit.</u>	<u>C</u>
D.	Hang a “Danger Live” notice on the equipment, put no bolts back in but ensure that accidental contact with live parts is not possible.	

46.	Where a single copper conductor is used to earth a Zener barrier, it shall have a minimum cross sectional area of:	
A.	1.5 sq mm.	
B.	2.5 sq mm.	
<u>C.</u>	<u>4.0 sq mm.</u>	<u>C</u>
D.	6.0 sq mm.	

47.	If screened cable is used in an earthed intrinsically safe circuit, where should the screen be earthed (Unless subject to specific requirements):	
A.	At one point only, to the same point as the circuit earth.	
B.	At the hazardous end only, to an equipotential earth.	
C.	At the non-hazardous area, at end only.	C
D.	At both ends.	

48.	When screened cables are used to interconnect intrinsically safe items, to where MUST the screen be connected:	
A.	To earth at one end only.	
B.	To earth at both ends.	
C.	To points as shown on the “hook up” (loop) diagram.	C
D.	To main earth conductor.	

49.	A multi-core cable has several pairs of individually screened cores. If an instrument requires 3 cores. Two will be taken from one pair, but where will you take the 3rd from:	
A.	Any spare core but it must be on the opposite side of the cable.	
B.	Use an unused core from a pair where the core already used is the 3 rd core from another instrument circuit.	
C.	Two core pairs are not acceptable. A3 core cable must be run.	C?
D.	Use one core from another pair and treat the remaining core as an “unused” core.	

50.	Wires, cables and apparatus may be color coded for various reasons. Where color coding is used to identify intrinsically safe cables and apparatus, which of the following is the preferred color:	
A.	Red.	
B.	Orange.	
C.	Yellow.	
D.	<u>Light blue.</u>	<u>D</u>

51.	What is a visual inspection:	
A.	<u>An inspection, which identifies, without the use of tools or access equipment, those defects apparent to the eye.</u>	<u>A</u>
B.	An inspection, which includes aspects covered by a close inspection and which identifies defects only by opening up or testing.	
C.	An inspection carried out before equipment is brought into service.	
D.	An inspection carried out on a proportion of the equipment in service.	

52.	There are 3 GRADES of inspection. Which of the following is a recognized grade:	
A.	<u>Close.</u>	<u>A</u>
B.	Periodic.	
C.	Frequent.	
D.	Sample.	

53.	What GRADE of inspection should be given to apparatus, systems and installations before they are brought into service:	
A.	Visual.	
B.	Close.	
C.	Detailed.	C
D.	<u>Sample.</u>	

54.	Where VISUAL inspection is carried out on EEx"d", "e" or "n" equipment, which of the following is a requirement:	
A.	<u>Lamp ratings, type and position are correct.</u>	
B.	Apparatus circuit identification is available.	B
C.	Flange faces are clean and undamaged.	
D.	Type of cable is appropriate.	

55.	Where DETAILED inspections of flameproof equipment are carried out, which ONE of the following checks is a requirement:	
A.	Cable screens are earthed.	
B.	Enclosed break and/or hermetically sealed devices are undamaged.	
C.	<u>Apparatus circuit identification is correct.</u>	C
D.	Internal battery meets plant requirements.	

56.	Where DETAILED inspections are carried out on EEx"d", "e" or "n" equipment, a number of checks are required. Which one of the following is a requirement at this time:	
A.	<u>Motor fans have sufficient clearance to enclosure and/or covers.</u>	A
B.	Motor power output is adequate for the duty.	
C.	Phase rotation of power supply is correct.	
D.	Motor speeds are correct.	

57.	Where CLOSE inspection is carried out on intrinsically safe apparatus which ONE of the following is an inspection requirement at this time:	
A.	Installation is clearly labeled.	A
B.	Electrical connections are tight.	
C.	<u>There are no authorized alterations.</u>	
D.	Cable screens are earthed in terminals.	

58.	If a site area has not been declared “gas free”, live working (under permit) MAY be allowed if:	
A.	You are wearing safety gloves.	
<u>B.</u>	<u>You are working on an intrinsically safe circuit.</u>	<u>B</u>
C.	The supply is from separated extra low voltage transformers (SELV).	
D.	The equipment is inside an EEx”d” enclosure.	

59.	Measuring instruments for use with intrinsically safe circuits need to be:	
A.	Intrinsically safe.	
B.	Fitted with G.S. 38 fused leads.	
C.	Approved for use in intrinsically safe circuits.	C
D.	No restrictions.	

60.	A Zener barrier unit is suspected as being faulty and MAY have blown its fuse. Which of the following is an appropriate workshop test:	
A.	Put in test rack and measure the current.	
B.	With outputs disconnected measure the supply voltage.	
C.	Use appropriate safety measures and check the incoming supply voltage to the unit.	
D.	Disconnect unit and measure the resistance between the supply side and the output.	D